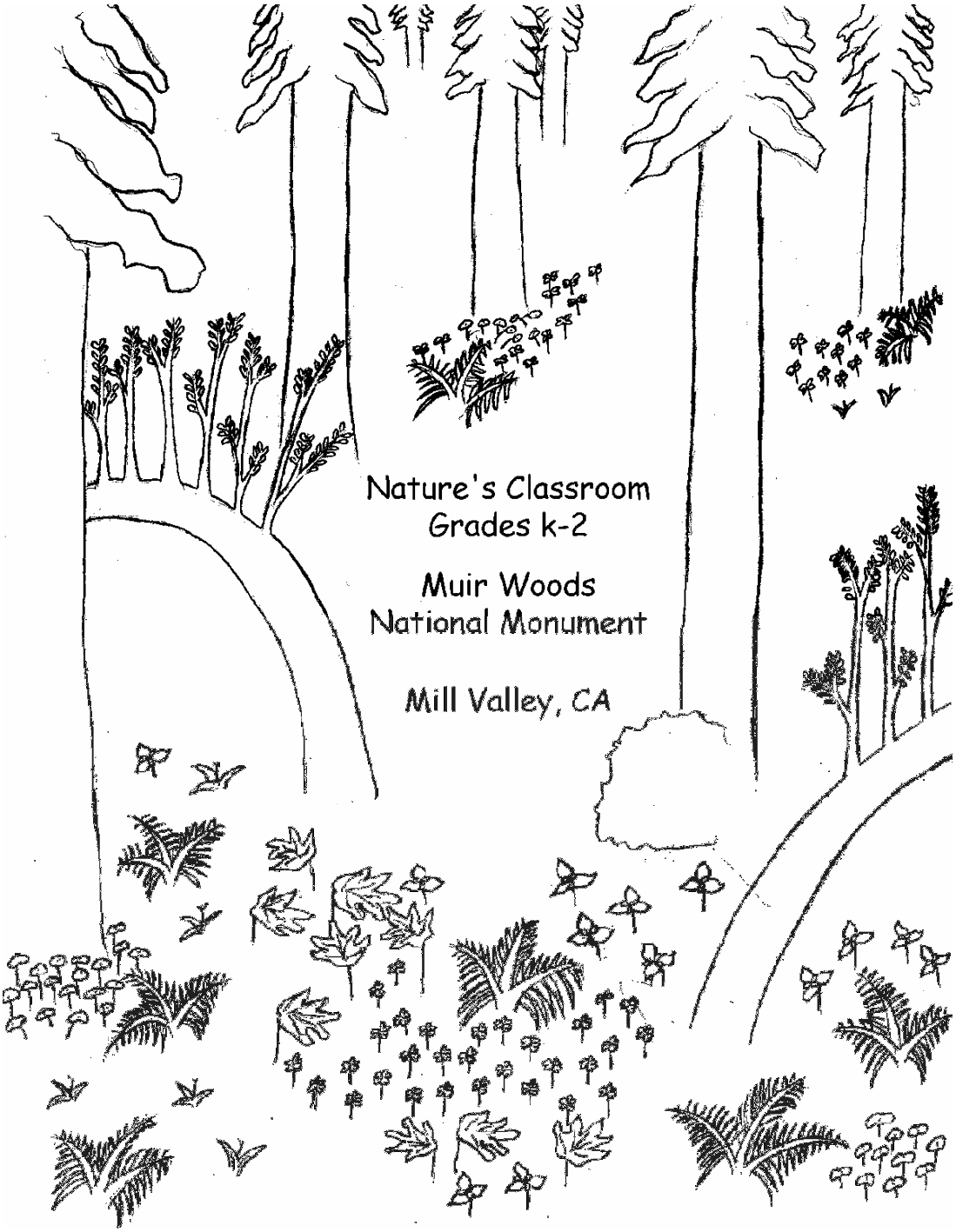
Nature's Classroom
Grades k-2
Muir Woods
National Monument
Mill Valley, CA

Dear Educator:

Welcome to the Parks as Classrooms program at Muir Woods National Monument. The Parks as Classrooms program strives to introduce the National Parks to teachers for use as a tool and educational resource. These programs, created in partnership with educators and community members, engage teachers and students in the mission of the National Park Service. They also serve to meet the educational needs of our communities and park supporters.

We are pleased that your class is participating in Nature's Classroom, an educational program for kindergarten through second grade. This program uses the natural resources of Muir Woods to lead students on an exploration of redwood tree growth and the survival of all life within the park using their "tools" – their five senses.

We hope that you will enjoy participating in the program, and that your visit to Muir Woods is educational and exciting! If you have any questions about the program or need help planning your visit, feel free to contact us at (415) 388-0107.

See you in the woods!

The Muir Woods Education Staff

Directions to Muir Woods National Monument

From the North:

Take 101 South to the Stinson Beach/Highway 1 exit. Turn right immediately and then left at the light. Turn left at the gas station, then follow the signs to Muir Woods. Meet at the Visitor Center.

From the South:

Take 101 North over the Golden Gate Bridge (there is no toll travelling north-bound). Take the Mill Valley/Stinson Beach/Highway 1 exit. Go through the traffic lights, then turn left at the gas station. From there follow the signs to Muir Woods. Meet at the Visitor Center.

From the East:

Take 580 West over the Richmond Bridge. Then take 101 South to the Stinson Beach/Highway 1 exit. Turn right immediately and then left at the light. Turn left at the gas station, then follow the signs to Muir Woods. Meet at the Visitor Center.

Upon leaving the park, turn right out of the parking lot and continue until Highway 1. To connect back with Highway 101, or to go to Muir Beach, turn left onto Highway 1. To go to the Muir Beach Overlook, or Stinson Beach turn right onto Highway 1.

Program Overview:

Nature's Classroom is a self-guided tour of Muir Woods created in accordance with state science standards. During the tour, students will discover ecological concepts and issues of sustainability through questioning, hands-on exploration, and facilitated discussion.

Each activity is designed to build on the last to show students' developing understanding of concepts. Concepts addressed in the program include:
-Redwood growth
-Survival of redwoods and other living things
-Habitat protection

There are four parts to the program:
-Pre-visit introductory lessons
-Self-guided park program
-Post-visit activity
-Program Assessment

Pre-Visit Introductory Lessons

These lessons should be conducted at least one day prior to visit. They are designed to initiate student thinking about the parts of a forest, their views on forests, and using their five senses. In the classroom, the teacher acts as a facilitator while the students begin to formulate their own ideas about forest life.

Self-Guided Park Program

At the park, you will be met at the Visitor Center by a Park representative who will engage the class in a discussion of redwood forest ecology. After the ranger talk, you will split your class into smaller groups with adult leaders. In these groups, students continue their inquiry into redwood ecology and survival in a redwood forest. Students examine practices that can help a forest and discover ways the park service and park visitors can help keep the park healthy.

Teachers and parent/adult chaperones act as guides and facilitators through the students' process of discovery. Guides allow the students to examine and question all assumptions, correct or incorrect, and let them draw their own conclusions. The participation of chaperons is integral to the success of Nature's Classroom. Their enthusiasm and exemplary behavior will greatly add to each group's learning experience.

Please make sure to return the fee waiver and video when you come for your visit.

Post-visit Activities

Included in this packet is a list of suggested post-visit activities. These activities are designed to allow the students to further examine their criteria for a healthy redwood forest ecosystem. They use the ideas the students started with and their experiences during the on-site visit to demonstrate through creative art and scientific exploration what they learned and how they learned it.

Program Assessment

The primary objectives of this program are to allow the students to use their natural curiosity about the world to explore scientific concepts and to lead them to the ideas of care and stewardship for our environment.

The teacher is required to complete an evaluation form at the end of the program. An evaluation of the program is necessary to measure the program's effectiveness and its ability to meet the needs of the students. Your professional opinion and experience are valuable to the program's future.

Program Goals:

Students will:

1. Develop their sense of inquiry.

2. Understand how trees grow.

3. Understand what living things need in order to survive.

4. Learn how to explore the natural world by using their five senses.

5. Develop a sense of respect for all living organisms and their habitats.

6. Develop a sense of responsibility to preserve our National Parks and other natural areas.

Program Objectives:

Upon completion of the program, students will:

1. Name the way trees start out their lives.

2. Name three things trees need in order to grow and survive.

3. Name one way the death of a tree can help the forest.

4. Describe two ways we are trying to protect our trees, plants, and animals at Muir Woods.

5. Describe two ways students can help protect National Parks and two ways to protect their own neighborhoods.

Planning Your Visit:

On the day of your visit, please make sure that each person in your group has the following items:

Lunch
Layered clothing including pants and sweatshirt or jacket
Sturdy walking shoes
Nametag
Rain jacket (optional)

Please arrive at Muir Woods at least 10 minutes before your scheduled time to organize your group. Restrooms and water fountains are located in the main parking lot.

Please inform the visitor center of your arrival. A park representative will then greet your group at the visitor center. Students should wear their nametags to the park.

Rules:

During your visit, you and your adult chaperones are responsible for the conduct of your students. Please make sure that everyone understands the rules before your visit.

-Walk at all times. Running can be dangerous.
-Stay together as a group. Don't leave the trail.
-Do not eat in the park – animals can become dependent on our food.
-Please remain quiet at all times.
-Keep the park clean. Do not leave food or trash on the ground.
-Respect the plants and animals in the park. Do not pick plants, hurt animals, disturb their homes, or throw rocks.
-Do not remove anything from the park.

Weather:

Muir Woods is generally cool and damp throughout the year. The winter months are usually rainy and the summer months tend to be foggy. Muir Woods is also very shady, so the temperature inside the park is generally 10 degrees cooler than the parking area. Always wear warm, layered clothing and sturdy shoes.

Parking:

There is parking for buses in the main parking lot, and there are two lots available for car parking. **Buses going to Muir Woods can be no longer than 35 feet.**

Cancellations:

We request that you cancel or reschedule your program at least 24 hours prior to your reservation date. If unusual circumstances arise on the day of your program, please call us promptly at 8:30 a.m. to cancel.

Lunch:

Picnicking is not permitted at Muir Woods. This rule is in effect in order to keep trash and leftovers from becoming an attraction for local wildlife. We want to ensure that the animals that live in the woods remain dependent on natural sources for their food.

Lunch may be eaten nearby at:

Muir Beach – turn right out of the parking lot. Go straight at the Highway 1 intersection then turn right at the next intersection. The road ends in the Muir Beach parking lot. (6 minutes; 3 miles).

Muir Beach Overlook – turn right out of the parking lot. Go right at the Highway 1 intersection, and continue uphill. Turn left on Muir Beach Overlook Drive. (8 minutes; 3.6 miles)

Stinson Beach – turn right out of the parking lot and turn right at the Highway 1 intersection. Take Highway 1 north to Stinson Beach. (20 minutes; 9.3 miles)

Pre-visit Activities

The following are suggested examples of pre-visit activities. Feel free to use those that will work best for your class and your curriculum. You may choose to adapt the activities as you see fit.

1. Protecting Our Parks

Summary:

National parks exist for three reasons: to protect the resources within them, preserve those resources for future generations, and provide opportunities for people to visit those resources. In this activity, students will begin to explore things that may harm plants and animals and will come up with alternatives to those activities.

Materials Needed: Markers/Crayons

Materials Provided: Protecting Parks picture page

Part I

1. Tell your students that they will be visiting a very special place called a National Park. In this special place we do things to protect it. Discuss the following situations and questions:

- In a National Park, we don't hurt plants. How do you think you could hurt a plant?
- In a National Park, we don't hurt animals. How do you think you could hurt animals?
- In a National Park, we make sure that the park stays clean of garbage. What things do you think you can do to help keep the park clean?

2. Pass out the Protecting Parks page. Ask the students to look carefully at the image and circle the pictures of the children they think are doing the right things. Ask them why they think one behavior is "right" and another is "wrong". Also, discuss the recommendations for an alternative the children could do that would be less harmful. Use the information on the Teacher's Page to help you guide the discussion.

3. As a group, have your class discuss why it is important to protect the plants and animals at Muir Woods – not only for the wildlife's sake, but also so that these resources will be there in the future to be experienced by other park visitors.

Part II

Protecting Our Parks: Teacher's Page

Children study the picture and decide which behavior is correct and incorrect. Students may color the picture.

After your students have completed the activity, discuss their answers with them.

Correct:

- Boy picking up trash. Keeping an area clean of garbage helps make the habitat safe for plants, animals, and people.
- Boy smelling flowers. Respect plants by not picking them.
- Girl taking a picture. She is appreciating the forest without disturbing it.

Incorrect:

- Boy picking flowers. Picking plants means they can't grow anymore, and by picking plants you may be destroying a home for an animal. Respect plants by letting them grow.
- Girl feeding animals. Human food can be bad for animals since they don't eat the same kinds of food as people. Animals that get human food forget how to get their own food and become dependent on people for food. Animals that get human food can become problems for people or even dangerous.
- Boy eating in the park and leaving trash on the ground. There is no eating in Muir Woods because of the danger of animals becoming dependent on our food. Also, leaving trash on the ground violates plant and animal habitats.
- Girl chasing bird. Disturbing animals in their habitat can hurt them and by chasing animals you can injure yourself. Respect animals by not disturbing them in their homes.
- Girl carving her initials into tree. Carving hurts the tree and also makes the park less beautiful to other visitors.
- Also, most of these kids have crossed over the fence. Crossing over the fence causes soil compaction that hurts the redwood trees by suffocating their roots. It can also cause damage to other plants by stamping on them.

2. Tools for Exploring Muir Woods

Summary:

Although scientists going out into the field make use of a number of tools, some of the most important things can be discovered simply by using the tools on our bodies: our five senses. Part one of this activity will introduce students to the five senses; part two will give you the opportunity to create additional tools that you can use while at Muir Woods.

Materials Needed: *(Part I)*

Several pieces of different textured fabric (velvet, corduroy, silk, etc.)
Several small jars with lids containing "smelly" things (herbs, spices, perfume, etc.)
(Part IIa)
Cardboard; Rubber Bands; One- or two-hole puncher
Reused paper (blank on one side, four or five pages for each student)
Sticks or Pencils (5-6 inches long)
(Part IIb)
Toilet paper tubes (two for each student)
String; Stapler; Paint or markers; Single-hole puncher

Part I – Sensory Exploration

1. Explain that each student has five tools on their body that they can use to explore Muir Woods. Ask them to guess what those tools are (Eyes, ears, nose, mouth, fingers).
2. While the students close their eyes, pass around the pieces of fabric. Ask the students to describe how they feel. Are they similar? Different? What kinds of things do you think you will be able to feel at Muir Woods?
3. Pass around the jars of "smelly" things. Ask the students to describe how they smell. Are they similar? Different? What kinds of things will you be able to smell at Muir Woods?
4. Ask the students to name all of the sounds they hear in the classroom. Record these on the blackboard. Next, ask the students to close their eyes and mouths and be as quiet as they can for thirty seconds. At the end of the time period, ask them to name all of the sounds they heard and record them on the board. How does this list compare with the first one? Did they hear more sounds? Fewer? How can "turning off" some of our senses allow others to work better? What kinds of things will you be able to hear at Muir Woods?
5. After lunch, ask the students to name something they ate that came from a plant. Ask the students if they think they will find that plant at Muir Woods. Is it okay to eat these plants if we see them in the forest? (No) Why not? (They might be poisonous, and/or if we eat them, there will not be anything left for the animals to eat).
6. Remind the students that they will need to bring all of their tools with them when they visit Muir Woods.

Part IIa – Journals

1. Cut cardboard into sections about 10x6 inches. Cut paper in half (the wide way).

2. Punch holes in the top of the paper and cardboard.

3. Place the pencil or stick across the holes; thread the rubber band through the holes and around the pencil.

Part IIb – Binoculars

1. Staple the two toilet paper tubes together side by side.

2. Decorate the tubes with paint or markers (but no sparkles or things that might fall off while walking through the woods).

3. Punch a hole in each tube and thread yarn or string through the holes. Make sure it is long enough to fit over the child's head.

3. What a Forest Means to Us

Summary:

Forests mean different things to different people. Students who have never visited Muir Woods may have interesting ideas about what they will see there. In this lesson, students will produce a picture of what they believe they will find in the woods and then discuss their findings. Students also watch a video (*Into the Forest*) or view the photo tour about Muir Woods and discuss what they have seen.

Materials Needed: Art Supplies
Butcher Paper
TV and VCR, Computer

Materials Provided by Muir Woods: *Into the Forest* video and/or photo tour

Part I

1. Divide the class into groups of five or six. Explain that each group will discuss what they expect to see, feel, smell, hear, and taste in Muir Woods (you can have them record this information in their journals).

2. Each group then collaborates to produce a picture incorporating all of their expectations. Students can use their creativity and use cutouts from magazines, paint, pastels or crayons to create their forest.

Part II

1. Show the *Into the Forest* video and/or the photo tour.

2. Stop the presentation at appropriate times for short class discussions and to have the students keep a record of their thoughts.

3. When the presentation is over, lead a discussion of what they first thought they would see, feel, smell, hear, and taste in the forest and how this compares with what they saw in the video and/or photo tour.

Note: In the video, Ranger Mia gives the children bug boxes and binoculars to use on their journey throughout the woods. Unfortunately, Muir Woods is unable to provide these supplies at this time. Please encourage your students to bring their own tools.

Self-Guided Park Program

Stop 1 – Visitor Center

1. Make sure your students use the bathrooms located in the parking lot.
2. Check into the Visitor Center – hand in your fee waiver and return your video. You will be given four nature detective maps (which contain the information for the self-guided program recorded in this section) for your use exploring the woods.
3. You will be met at the Visitor Center by the park staff member who will give you an orientation. Make sure to alert the staff member of your methods of classroom control and ask them any questions you have about the program or Muir Woods. Also, let them know how long of a talk you want, and if you have any questions about travelling to the location in which you will eat lunch.
4. The staff member will give a quick introduction at the Visitor Center, and then will lead your class on a ten minute walk to the Classroom area inside the woods.

Stop 2 – Classroom Area

1. The park staff will give your class a ten to fifteen minute talk on redwood forest ecology. The staff member will lead the students in a discussion of:
- How tall the redwood trees are
- How redwood trees start off their lives
- What redwood trees need to grow (water, sun, air, space, nutrients)
- How redwood trees can die and how their death can help the forest
- The animals that live in Muir Woods
- The rules for their visit:
    - Talk in quiet voices and do not run
    - Do not eat in the woods
    - Stay on the trail
    - Leave everything as you found it (do not take anything with you)

2. You and the students can ask the staff member any last questions.
3. You are free to do the rest of your program on your own. You may want to divide your class in several groups, each with a different teacher or adult/parent chaperone.

Stop 3 – Before Bridge 2

1. After leaving the Classroom Area, turn left and proceed north along the path. Stop at Bridge 2.
2. Take a moment to look at the pavement under your feet.
3. Is it flat (No). Why not? (Redwood roots are growing underneath). Explain to students that roots assist the tree with strength to stand and also with water intake. Redwood roots only grow approximately 10 feet below the ground, but extend for 50-100 feet around the tree.

Stop 4 – Bridge 2

1. Walk about halfway across Bridge 2 and stop to look in the creek.
2. Does anyone see any fish? (In the winter months you may see full-grown salmon or trout; the rest of the year look for baby fish swimming in the pools). Explain to students the 3-year cycle of the Coho Salmon. Ask them if they know where the water comes from and where it eventually flows to.
3. Why does the sign say "please do not throw coins in the creek?" (coins are not good for the fish).
4. How is the creek important to the redwood trees? (Helps water them).

Stop 5 – Bohemian Grove

1. Finish walking across the bridge and turn left. Walk along the path and you will come to a hollowed-out tree on your left.
2. What do you think happened to this tree? (A fire burned it). Is it still alive? (Yes). How can you tell? (Look up – the needles are still green). Ask students if and why fire is important to the health of a forest.
3. This is a good area to stop and have students add to their journals.

Stop 6 – Open Area

1. Continue walking south (downstream) along the path. Along the way, look up once in a while to see the different amounts of light that reach the forest floor. Stop along the path at a wide spot.
2. Do you see the same plants growing in open areas and under redwood trees? (No). Why not? (Some plants need more light than others). Explain how Bay Laurel trees reach and bend for sunlight, and how fallen trees open up gaps for sunlight to stream through.

Stop 7 – Fallen Tree

1. Continue to follow the path. Stop when you come to the fallen tree (the tree lying across the path with the middle cut out).
2. How do you know how old a tree is ? (By counting the rings).
3. Look closely at the rings. See how some of the rings are bigger than others? Why would this be? (The big rings occur in years when the tree grows a lot – when it gets plenty of sun and water). Ask students what plants, animals and insects might make homes out of fallen trees.

Stop 8 – Boardwalk After Bridge 1

1. Follow the path as it crosses bridge 1 and turn right to exit the park. If time allows, a short walk to your left will take you to the crosscut and trees of the world exhibit.
2. Think about the boardwalk under your feet. How is this different from the asphalt you saw before with the redwood roots under it? Which do you think is healthier for the trees? The animals?

Stop 9 – Visitor Center

1. You have now finished your journey through Muir Woods. Please return the nature detectives guide and map to the Visitor Center so that future classes can use it.

Post-Visit Activities

These activities are geared towards cementing the concepts the students learned on their journey. Again, choose those most appropriate for your class and change the activities as necessary.

1. Build a Tree Activity

Summary:

Following their visit to Muir Woods, students will need reinforcement of the concepts they learned. In this lesson, students re-create the life of a tree by collaborating in "building" a Redwood and acting out the processes that keep it alive.

Materials needed: None. Enough space should be provided for students to form a large circle.

1. **Heartwood** – This is the innermost layer of the tree. These children will stand straight and strong, and can make heartbeat noises if they like. This will be the smallest group with just one or two children for a group of 25.
2. **Xylem** – This is the next layer of the tree that brings the water up from the roots to the leaves. Students will crouch down and "grasp" the water with their hands, bringing it up to the leaves. This should be just a few children.
3. **Phloem** – This is the next layer that brings the sugars down from the leaves through the tree. These children start out standing with their arms like branches and slowly crouch down, bringing nutrients through the tree. This will be the second to largest group.
4. **Bark** – This layer protects the tree from insects who want to eat the sweet phloem, and also protects it from fire. These children should hold hands to protect the insides of the tree, and can softly "bark" like a dog. This will be most of the children because they need to fit around the rest of the group.

Once the tree is built, have it "work" with the heartwood standing straight and strong, the xylem delivering water, the phloem delivering nutrients, and the bark protecting the tree.

2. Revisiting Our Forests

Summary:

After their visit to Muir Woods, students will have different ideas about what kinds of things are found in a forest. In this lesson, students create pictures illustrating what they saw at Muir Woods and then compare them to the posters they made before their visit.

Materials needed: Art Supplies
Butcher Paper
Illustrations from "What a Forest Means to Us"

1. Divide the class into the groups they were in for the "What a Forest Means to Us" activity. Have the groups discuss the things they saw, felt, smelled, heard, and tasted during their visit to Muir Woods.
2. Each group then collaborates to produce a picture incorporating all of their observations.
3. Have the groups compare their before and after pictures. What is different? What is the same? Ask the students how the plants and animals that they observed at Muir Woods differed in appearance and behavior. Questions to ask them may include: Where was it found? What does it look like? What does it eat? What role does it play in the health of the forest? How do they differ from one another?
4. If appropriate, have each group give a short presentation of their findings.

3. The Tree's in the Mail!

Summary:

After their visit to Muir Woods, students will have a basic knowledge of the life cycle of a tree. In this lesson, students will produce postcards illustrating parts of a redwood tree and things that redwood trees need to grow.

Materials needed: Self-Guided Park Program information
Paper (cut into postcard-sized pieces) or index cards
Markers, crayons, pencils, paint, etc.

1. Review the life cycle of a tree with the students. If necessary, refer back to self-guided park program, park nature guide brochure, or other resources.
2. Instruct the students that they are to create postcards showing different parts of a redwood tree (seeds, leaves, cones) or things that redwood trees need to survive (air, water, light). Each student should create three or four cards. Postcards can also show animal and insect life in the woods. Students can describe different parts of the animal or insect, such as the slimy exterior of a Banana Slug, the wings of a Monarch Butterfly or the antlers of a male Black-Tailed Deer.
3. Each card should contain one illustration along with a one- or two-sentence note about what is happening in the picture.
4. Encourage your students to share their postcards with their families, create an art gallery in your classroom, or mail them to us at Muir Woods.

Teacher Evaluation

NAME: SCHOOL:

VISIT DATE: GRADE:

1. Was the pre-visit material sent to you helpful? Which teaching tools did you use? (i.e. park nature guide brochure, video, Photo Tour, Redwood Vocabulary list, etc.).

2. Did your students complete any of the pre- or post-site activities? (Circle the activities completed). What was your impression of these activities?

a. Protecting Our Parks
b. Tools for Exploring Muir Woods
c. What a Forest Means to Us
d. Revisiting our Forests
e. The Tree's in the Mail!

3. What was the ranger's name that worked with your class?

4. Describe the ranger's effectiveness at communicating with your students.

5. Was the program appropriate to your grade level? YES NO

6. Did Nature's Classroom add to the students' experience at Muir Woods? If yes, in what way? If no, why not?

7. How helpful was the Nature Detective Guide for parent/adult-led groups? Was it a useful tool?

8. What did you like the most about the Nature's Classroom program?

9. What would you change about the Nature's Classroom program?

Please send the completed form to: Education Coordinator,
Muir Woods National Monument,
Mill Valley, CA 94965

Redwood Vocabulary

You may want to share these words with your class before your Muir Woods visit, or you may find them helpful during your exploration of Muir Woods.

Bark – the protective outer layer ("skin") of a tree or woody shrub. It covers the branches, trunk, and roots and assists in protecting the plant from disease, insects, and fire.

Burl – woody growth at the base of a redwood tree. It contains dormant redwood buds that sprout when the tree undergoes stress (fire, flood, human impact, etc.).

Canopy – layer formed by the leaves and branches of the forests' tallest trees. At Muir Woods the canopy is over 200 feet above the ground. It creates the cool and shady atmosphere in the woods.

Cone – woody reproductive part of cone bearing trees. It contains the seeds for the growth of young trees. Some cone bearing trees at Muir Woods: Douglas Fir, redwood.

Creek – flowing water, a small stream. A non-living element of a forest habitat. Redwood Creek flows from Mount Tamalpais to the Pacific Ocean.

Evergreen – a tree or plant whose leaves or needles stay green all year round. Examples: redwood, Douglas Fir, Evergreen Huckleberry.

Family Circle – the growth of redwood trees in a ring as a result of having sprouted from burls.

Habitat – the place where a person or other organism is most likely to be found; type of environment that an animal or plant normally lives or occurs. Some examples of habitats at Muir Woods: Redwood Creek is a habitat for Steelhead fingerlings; the redwood forest is a habitat for Spotted Owls.

Living elements – those that can take in food, get energy from it, grow, adapt to their surroundings, and reproduce their kind.

National Park/National Monument – a natural landmark, historic site, or tract of land set aside by a national government for preservation and public enjoyment.

Non-living elements – temperature, topography, climate, geology, and geography.

Old Growth – unlogged forest dominated by trees over 250 years old. Characteristics include: large trees, mixed forest age, mixed type of trees, snags, accumulations of decaying wood supporting plants and animals.

Preserve – to keep in unaltered condition, maintain unchanged.

Protect – to keep from being damaged or injured.

Provide – to furnish, supply, make available.

Recycle – to put through a cycle again, to reuse, to reprocess so as to use again.

Understory – the smaller shrubs and trees growing under the taller forest canopy.

Teacher's Reference List

We have many great resources available at the Visitor Center bookstore. You may find a book that you wish to share with your class before a Muir Woods visit, or a video to incorporate into your curriculum. **Teachers receive a 15% discount on all items purchased for educational use**, and mail order is available. Just call (415) 388-7368 and allow 2-3 weeks time for shipping.
* items available at the Muir Woods Visitor Center.

Muir Woods

* Frank, Susan and Frank, Phil, ***The Muir Woods Handbook***, ISBN: 0764910272
* Hart, John, ***Muir Woods: Redwood Refuge***, ISBN: 0962520640
* Khosla, Maya, ***Web of Water***, ISBN: 1883869277
* Morley, Jim, ***Muir Woods***, ISBN: 0938765531

Redwood Forests/Ancient Forests

* Anderson, Margaret, Field, Nancy, and Stephenson, Karen, ***Ancient Forests: Discovering Nature***, ISBN: 0941042146
* Adler, David A., ***Redwoods Are the Tallest Trees in the World***, ISBN: 069001368X
Collings, Randy, ***Redwood Empire***
Cooper, Ann, ***In the Forest***, ISBN: 0916278719
* Guiney, Miriam, ***Redwood Parks Activity Book***
Hewes, Jeremy Joan, ***Redwoods: World's Tallest Trees***, ISBN: 0831773812
* Reed-Jones, Carol, ***The Tree in the Ancient Forest*** ISBN: 1883220319
* Schneider, Bill, ***The Tree Giants: The Story of the Redwoods, The World's Largest Trees***, ISBN: 0937959405
* Vieira, Linda, ***The Ever-Living Tree: The Life and Times of a Coast Redwood***, ISBN: 0802774776

John Muir

* Cornell, Joseph, ***John Muir: My Life with Nature***, ISBN: 1584690097
* Greene, Carol, ***John Muir: Man of the Wild Places***, ISBN: 0516442201
* Muir, John, ***Stickeen***, ISBN: 1883220785
* Stetson, Lee, ed., ***The Wild Muir***, ISBN: 0939666758

Wildlife

Dunmire, Marj, ***Faces of the Forest***, ISBN: 0942559088
Guiberson, Branda Z., ***Salmon Story***, ISBN: 0805042547
The California Center for Wildlife, ***Living with Wildlife***, ISBN: 0871565471
National Wildlife Federation, ***Ranger Rick's Nature Scope***
Steelquist, Robert, ***Field Guide to Pacific Salmon***, ISBN: 0912365641

Native American

* Caduto, Michael J. and Bruchac, Joseph, ***Native Plant Stories***, ISBN: 1555912125
Caduto, Michael J. and Bruchac, Joseph, ***Keepers of the Animals***, ISBN: 1555913865
Caduto, Michael J. and Bruchac, Joseph, ***Keepers of the Earth***, ISBN: 1555913857
* Margolin, Malcolm, ***The Ohlone Way***, ISBN: 0930588010

Activity Books

Chichester, Page, ***The National Wildlife Federation Book of Family Nature Activities***, ISBN: 0805046860

* Cornell, Joseph, ***Sharing Nature With Children***, ISBN: 1883220734
Cornell, Joseph, ***Sharing Nature With Children II***, ISBN: 1883220874
* Ferra, Lorraine, ***A Crow Doesn't Need A Shadow: A Guide to Writing Poetry from Nature***, ISBN: 0879056002
Field, Nancy and Machlis, Sally, ***Discovering Endangered Species: A Nature Activity Book***, ISBN: 094104209X
* Field, Nancy and Machlis, Sally, ***Discovering Salmon: A Nature Activity Book***, ISBN: 0941042057

Natural History

* Kricher, John, ***Peterson's First Guide to Forests***, ISBN: 0395971977
Kricher, John, and Bennet, Sarah, ***Peterson Field Guide to Coloring Books – Forests***, ISBN: 0395346762
* Lyons, Kathleen, and Cooney-Lazaneo, Mary Beth, ***Plants of the Coast Redwood Region***, ISBN: 0962696102
* Mitchell, Andrew, ***The Young Naturalist: An Usborne Guide***, ISBN: 086020653X
* Ross, Michael Elsohn, ***Flower Watching with Alice Eastwood***, ISBN: 1575050056
* Watts, Phoebe, ***Redwood Region Flower Finder***, ISBN: 0912550082
* ***The Usborne Complete First Book of Nature***, ISBN: 0746005636

Audio

* Banana Slug String Band, "Adventure on the Air Cycle" audio tape
* Banana Slug String Band, "Dirt Made My Lunch" audio tape
Miche, Mary, "Earthy Tunes" audio tape. Song Trek Music, Berkeley.
Miche, Mary, "Nature Nuts" audio tape. Song Trek Music, Berkeley.

Video

* Cornell, Joseph, ***Sharing Nature with Children***, video, Dawn Publications.
* Frederic Back, ***The Man Who Planted Trees***, video, ISBN: 1559741112

Additional Resources

Association for Environmental and Outdoor Education (AEOE)
2120 N. Pacific Ave. #84, Santa Cruz, CA 95060 Phone: (831) 684-0148

Bay Area Environmental Education Fair (BAEER)
Takes place in San Rafael in the Marin County Civic Center.

Golden Gate National Parks Conservancy
www.parksconservancy.org

Humboldt Redwoods Interpretive Association
P.O. Box 276, Weott, CA 95571 Phone: (707) 946-2263

Muir Woods Web Site: http://www.nps.gov/muwo

National Park Service Web Site: www.nps.gov

Save-the-Redwoods League
114 Sansome Street, San Francisco, CA 94104 Phone: (415) 362-2352

Selected California State Science Standards

Kindergarten:

1. Life Sciences: Different types of plants and animals inhabit the earth. As a basis for understanding this concept:
- Students know how to observe and describe similarities and differences in the appearance and behavior of plants and animals (i.e. – seed-bearing plants, birds, fish, insects, etc.).
- Students know how to identify major structures of common plants and animals (i.e. – stems, leaves, roots, arms, wings, legs).

2. Investigation and Experimentation: Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, ---
- students should develop their own questions and perform investigations. Students will:
- Observe common objects by using the five senses.
- Communicate observations orally and through drawings.

Grade 1:

1. Life Sciences: Plants and animals meet their needs in different ways. As a basis for understanding this concept:
- Plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.
- Students know both plants and animals need water, animals need food, and plants need light.
- Students know animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.
- Students know roots are associated with the intake of water and soil nutrients and green leaves are associated with making food from sunlight.

Grade Two:

1. Life Sciences: Plants and animals have predictable life cycles. As a basis for understanding this concept:
- Students know many characteristics of an organism are inherited from the parents. Some characteristics are caused or influenced by the environment.
- Students know light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants.